

The Total Solar Eclipse of 1908 January 3.

By A. M. W. Downing, D.Sc., F.R.S.

There are two Pacific islands favourably placed for the observation of this eclipse, viz. Hull Island, one of the Phoenix group, and Flint Island, one of the Line group. The astronomical details of the eclipse for these two islands are given below, the calculations having been made from the data of the *Nautical Almanac*. As the errors of the Moon's tabular places now amount to sensible, and apparently increasing, quantities, observers are warned that the calculated times of the various phases of the eclipse may differ considerably from the observed times, the calculated times being (with the present values of the errors) too late. In order to obviate, as much as possible, inconvenience arising from this cause, I have added in each case the intervals in time from the instant when the cusps subtend an angle of certain specified value at the Sun's centre to the commencement of totality.

The plans of the islands here reproduced are taken from the official charts published by the Hydrographic Office. The geographical details are abridged from the *Admiralty Sailing Directions, Pacific Islands*, vols. ii. and iii., 3rd ed., 1900.

The offices of Levers' Pacific Plantations Company, mentioned below, are situated at Port Sunlight, Cheshire. Intending observers of the eclipse should communicate with the Company at this address.

My thanks are due to Capt. A. M. Field, R.N., F.R.S., for his kindness in referring me to the available sources of information regarding these islands.

HULL ISLAND. Long. 172° 13' W. Lat. 4° 30' S.

Mean Solar Time.

		Greenwich.				Local.				Angle from	
		d	h	m	s	d	h	m	s	North Point.	Vertex.
First Contact.	...	Jan. 3	7	18	33	Jan. 2	19	49	41	281°	5°
Total Eclipse	...	{ 3 8 30 36				{ 2 21 1 44				88	162
		{ 3 8 33 27				{ 2 21 4 35				294	8
Last Contact	...	3	9	58	12	2	22	29	20	100	155

Duration of totality, 2m. 51s.

Sun's altitude at totality, 43°.

Angle of Cusps.	Time before Commencement of Totality.
°	s
90	34
60	13
45	7
30	3
15	$\frac{3}{4}$

FLINT ISLAND. Long. 151° 48' W. Lat. 11° 26' S.

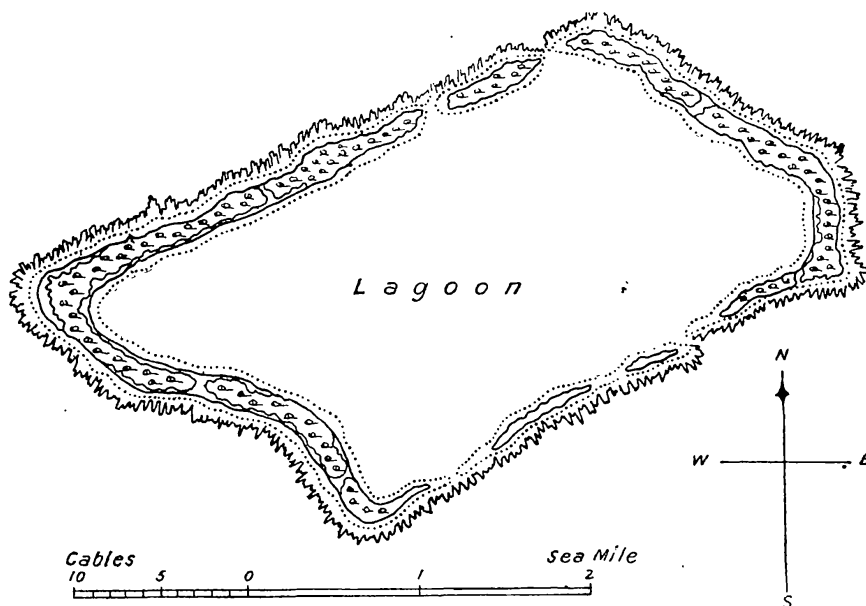
Mean Solar Time.

	Greenwich.				Local.				Angle from	
	d	h	m	s	d	h	m	s	North Point.	Vertex.
First Contact. ...	Jan. 3	7	52	51	Jan. 2	21	45	39	278°	355°
Total Eclipse ... {	3	9	22	44	2	23	15	32	107	153
	3	9	26	44	2	23	19	32	262	308
Last Contact. ...	3	11	2	59	3	0	55	47	90	42

Duration of totality, 4m. os.

Sun's altitude at totality, 74°.

Angle of Cusps.	Time before Commencement of Totality.
90°	47
60	18
45	10
30	4
15	1



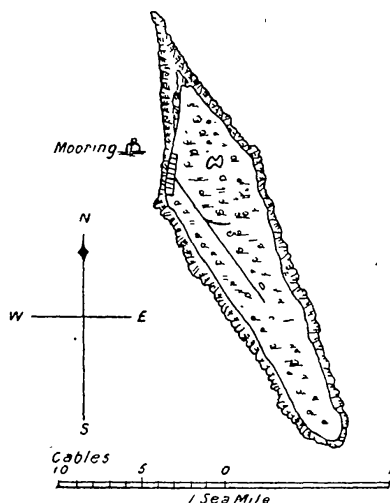
Hull Island.

HULL ISLAND (British) was discovered and so named by Wilkes in 1840. It has a lagoon and a little fresh water, and cocoanut trees on it, about 50 feet high. A coral reef fringes the island, and landing is difficult except by entering the lagoon by means of the boat passages on the north-west side. There is no anchorage.

In 1899 there were no inhabitants on the island.

It is now leased to Levers' Pacific Plantations Company.

The winds are almost constantly from the eastward, but squalls, accompanied by light rain, occur in the neighbourhood all the year round. The wind is variable from January to May, during which period bad weather is most common.



Flint Island.

FLINT ISLAND (British), discovered in 1801, is 13 feet high, covered with brushwood and trees, and is visible from the mast-head from a distance of 16 miles. It is about  $2\frac{1}{2}$  miles long N.N.W. and S.S.E., half a mile wide, and is fringed by a steep coral reef which dries at low water, and extends seaward generally about half a cable, but off the northern end of the island it extends seaward  $4\frac{1}{2}$  cables, and off the southern end E.S.E.  $2\frac{1}{2}$  cables. In the interior are two small lagoons of brackish water.

In 1880 October the island was uninhabited, and the buoys formerly in use were gone.

It is now leased to Levers' Pacific Plantations Company.

There is little or no rise and fall of tide at Flint Island.

The landing is very bad even for surf-boats, but it is said to export nearly 200 tons of copra annually.

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*Preliminary Account of Flash Spectra taken 1905 August 30.*

By S. A. Mitchell, Ph.D.

Upon the invitation of Admiral Chester, Superintendent of the U.S. Naval Observatory, the writer became a member of the United States expedition to observe the total eclipse of the Sun. The party crossed the Atlantic in the three men-of-war, U.S.S. "Minneapolis," U.S.S. "Cæsar," and U.S.S. "Dixie."